Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Prevention of contrast-induced renal damage: percentage of patients at risk of developing acute nephropathy to whom a prevention program is applied prior to tests with iodine-containing contrast media.

Source(s)

Ministry of Health. Safe practices indicators project: background, summary of methods and measurement strategies. Madrid: Ministry of Health; 2009 Feb 20. 97 p.

Measure Domain

Primary Measure Domain

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to determine the percentage of patients at risk of developing acute nephropathy (plasma creatinine greater than 1.5 mg/dl) to whom a prevention program is applied prior to tests with iodine-containing contrast media. Fluid therapy via two protocols is considered a prevention measure:

> 1 ml/kg/hour of crystalloids (saline or hyposaline solution or glucose water), starting 12 hours previous to the diagnostic test and continuing up to 12 hours after the test.
> 1,000 ml of water taken orally in the ten hours previous, followed by saline solution administered intravenously at a rate of 300 ml/hour during 30-60 minutes and continued for the next six hours.

The following therapeutic regime must also have been prescribed and administered: 600 mg N-

acetylcysteine, taken orally, twice a day one day before and one day after the procedure. In the case of patients allergic to N- acetylcysteine, treatment with theophylline could be considered.

Rationale

Adverse events resulting from the intravenous administration of contrast dye include allergic reactions, anaphylaxis and kidney damage. Contrast media-induced renal failure rarely occurs in patients with normal kidney function, but patients with pre-existing renal insufficiency or other conditions (e.g., diabetic nephropathy, dehydration, congestive heart failure or concurrent administration of nephrotoxic drugs) are at risk for renal failure when given iodine-containing contrast media.

Main aim of indicator: to increase prevention of acute nephropathy resulting from administration of iodine-containing contrast media.

Primary Clinical Component

Contrast-induced acute nephropathy; prevention program

Denominator Description

Total number of patients at risk of developing contrast-induced nephropathy (plasma creatinine greater than 1.5 mg/dl), excluding patients undergoing extrarenal cleansing techniques

Numerator Description

Number of patients to whom a contrast-induced acute nephropathy prevention program is applied (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Evidence Supporting the Criterion of Quality

A formal consensus procedure involving experts in relevant clinical, methodological, and organizational sciences

A systematic review of the clinical literature

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

Need for the Measure

Overall poor quality for the performance measured

Variation in quality for the performance measured

Evidence Supporting Need for the Measure

Ministerio de Sanidad y Consumo. Indicadores de buenas practicas sobre seguridad del paciente. Resultados de su medicion en una muestra de hospitales del sistema nacional de salud EspaÃ±ol. Madrid: Ministerio de Sanidad y Consumo; 2008. 95 p.

State of Use of the Measure

State of Use

Current routine use

Current Use

Internal quality improvement

Application of Measure in its Current Use

Care Setting

Hospitals

Professionals Responsible for Health Care

Advanced Practice Nurses

Nurses

Physicians

Lowest Level of Health Care Delivery Addressed

Single Health Care Delivery Organizations

Target Population Age

Unspecified

Target Population Gender

Either male or female

Stratification by Vulnerable Populations

Unspecified

Characteristics of the Primary Clinical Component

Incidence/Prevalence

Incidence/Prevalence

24.1% of patients at risk of developing acute nephropathy undergo a prevention program prior to tests with iodine-containing contrast media.

Evidence for Incidence/Prevalence

Ministerio de Sanidad y Consumo. Indicadores de buenas practicas sobre seguridad del paciente. Resultados de su medicion en una muestra de hospitales del sistema nacional de salud EspaÃ±ol. Madrid: Ministerio de Sanidad y Consumo; 2008. 95 p.

Association with Vulnerable Populations

Unspecified

Burden of Illness

See the "Rationale" field.

Utilization

Unspecified

Costs

Unspecified

Institute of Medicine (IOM) Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Safety

Data Collection for the Measure

Case Finding

Users of care only

Description of Case Finding

Patients at risk of developing contrast-induced nephropathy (plasma creatinine greater than 1.5 mg/dl), excluding patients undergoing extrarenal cleansing techniques

Denominator Sampling Frame

Patients associated with provider

Denominator Inclusions/Exclusions

Inclusions
Total number of patients at risk of developing contrast-induced nephropathy (plasma creatinine greater than 1.5 mg/dl)

Exclusions
Exclude patients undergoing extrarenal cleansing techniques.

Relationship of Denominator to Numerator

All cases in the denominator are equally eligible to appear in the numerator

Denominator (Index) Event

Clinical Condition

Diagnostic Evaluation

Denominator Time Window

Time window is a single point in time

Numerator Inclusions/Exclusions

Inclusions
Number of patients to whom a contrast-induced acute nephropathy prevention program* is applied

*Fluid therapy via two protocols is considered a prevention measure:

> 1 ml/kg/hour of crystalloids (saline or hyposaline solution or glucose water), starting 12 hours previous to the diagnostic test and continuing up to 12 hours after the test.
> 1,000 ml of water taken orally in the ten hours previous, followed by saline solution administered intravenously at a rate of 300 ml/hour during 30-60 minutes and continued for the next six hours.

The following therapeutic regime must also have been prescribed and administered: 600 mg N-acetylcysteine, taken orally, twice a day one day before and one day after the procedure. In the case of patients allergic to N- acetylcysteine, treatment with theophylline could be considered.

Exclusions
Exclude patients undergoing extrarenal cleansing techniques.

Measure Results Under Control of Health Care Professionals,

Organizations and/or Policymakers

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

Numerator Time Window

Fixed time period

Data Source

Administrative data

Medical record

Level of Determination of Quality

Individual Case

Pre-existing Instrument Used

None

Computation of the Measure

Scoring

Rate

Interpretation of Score

Better quality is associated with a higher score

Allowance for Patient Factors

Unspecified

Standard of Comparison

Internal time comparison

Evaluation of Measure Properties

Extent of Measure Testing

After pilot testing, the set of indicators has been measured in a random sample of 25 Spanish hospitals, stratified by hospital size. The main objective has been to field test the feasibility of measurement in the

various settings representing real life situations in the context of the Spanish Health Care System.

Both the whole indicators validation report and the results of the baseline measurement in a sample of the Spanish National Health Service (NHS) hospitals may be accessed and downloaded from the Spanish Ministry of Health web page (in Spanish):

Validation report
Results of baseline measurement in Spanish NHS hospitals

Evidence for Reliability/Validity Testing

Ministerio de Sanidad y Consumo. Construccion y validacion de indicadores de buenas practicas sobre seguridad del paciente. Madrid: Ministerio de Sanidad y Consumo; 2008. 178 p.

Ministerio de Sanidad y Consumo. Indicadores de buenas practicas sobre seguridad del paciente. Resultados de su medicion en una muestra de hospitales del sistema nacional de salud EspaÃ±ol. Madrid: Ministerio de Sanidad y Consumo; 2008. 95 p.

Ministry of Health. Safe practices indicators project: background, summary of methods and measurement strategies. Madrid: Ministry of Health; 2009 Feb 20. 97 p.

Identifying Information

Original Title

Percentage of patients at risk of developing acute nephropathy to whom a prevention program is applied prior to tests with iodine-containing contrast media.

Measure Collection Name

Safe Practices Indicators Project

Measure Set Name

Adopting Safe Practices in Specific Clinical Care Settings or for Specific Processes of Care

Measure Subset Name

Prevention of Contrast Media-induced Renal Damage

Submitter

Spanish Agency for Healthcare Quality of the Spanish Ministry of Health - National Government Agency [Non-U.S.]

Developer

Grupo de InvestigaciÃ³n sobre GestiÃ³n de la Calidad en Servicios de Salud, University of Murcia, under contract to the Spanish Ministry of Health - National Government Agency [Non-U.S.]

Funding Source(s)

Agency for Quality, Spanish Ministry of Health

Composition of the Group that Developed the Measure

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Castillo, Carmen; LÃ³pez, M. JosÃ©; RamÃ³n, Teresa; Nurses

Carrillo, AndrÃ©s, MD; Intensive Care Specialist

Iranzo, M. Dolores; Hospital pharmacist

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Financial Disclosures/Other Potential Conflicts of Interest

Project entirely financed by the Spanish Ministry of Health.

Adaptation

Measure was not adapted from another source.

Release Date

2009 Feb

Measure Status

This is the current release of the measure.

Source(s)

Ministry of Health. Safe practices indicators project: background, summary of methods and measurement strategies. Madrid: Ministry of Health; 2009 Feb 20. 97 p.

Measure Availability

The individual measure, "Percentage of Patients at Risk of Developing Acute Nephropathy to Whom a Prevention Program is Applied Prior to Tests with Iodine-containing Contrast Media," is published in "Safe Practices Indicators Project: Background, Summary of Methods and Measurement Strategies."

For more information, contact:

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Companion Documents

The following are available:

Ministerio de Sanidad y Consumo. Construccion y validacion de indicadores de buenas practicas sobre seguridad del paciente. Madrid: Ministerio de Sanidad y Consumo; 2008. 178 p. This document is available in Portable Document Format (PDF) from the Ministry of Health and Social Policy Web site (in Spanish).

Ministerio de Sanidad y Consumo. Indicadores de buenas practicas sobre seguridad del paciente. Resultados de su medicion en una muestra de hospitales del sistema nacional de salud EspaÃ±ol. Madrid: Ministerio de Sanidad y Consumo; 2008. 95 p. This document is available in PDF from the Ministry of Health and Social Policy Web site (in Spanish).

NQMC Status

This NQMC summary was completed by ECRI Institute on September 11, 2009. The information was verified by the measure developer on December 23, 2009.

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